November 10, 2004

Mr. A. Christopher Bakken, III
President & Chief Nuclear Officer
PSEG Nuclear - X15
P.O. Box 236
Hancocks Bridge, NJ 08038

SUBJECT: SALEM NUCLEAR GENERATING STATION, UNIT NOS. 1 AND 2, REQUEST FOR ADDITIONAL INFORMATION RE: AMENDMENT TO REFLECT ADDITION OF THE CHILLED WATER SYSTEM TO PROVIDE COOLING TO THE CONTAINMENT FAN COOLING UNITS (TAC NOS. MC2726 AND MC3649)

Dear Mr. Bakken:

By letter dated April 15, 2004, as supplemented by letter dated August 11, 2004, PSEG Nuclear, LLC (PSEG) submitted a request for changes to the Salem Nuclear Generating Station, Unit Nos. 1 and 2 (Salem), Technical Specifications (TSs). The proposed changes reflect the addition of the chilled water system to provide cooling water to the containment fan cooling units. The amendment request also proposes to revise a non-conservative Action Statement for Salem that allows three containment cooling fans to be inoperable under certain conditions.

The Nuclear Regulatory Commission (NRC) has determined that responses to the questions in the enclosure to this letter are necessary in order for the staff to complete its review. This enclosure provides questions from the Office of Nuclear Reactor Regulation (NRR), Division of Systems Safety and Analysis (DSSA) Probabilistic Safety and Assessment Branch. Please note that we may be providing additional questions regarding this amendment request, from NRR, DSSA Plant Systems Branch, later this year. At the time of our final request for additional information we will negotiate a response schedule with your staff. The enclosed questions have been forwarded electronically to Mr. Jesus Arias of your staff. If you have any questions I can be reached at (301) 415-1494.

Sincerely,

/RA/

George F. Wunder, Project Manager, Section 2
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-272 and 50-311

Enclosure: As stated

cc w/encl: See next page

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Salem Nuclear Generating Station, Unit Nos. 1 and 2

cc:

Mr. Michael H. Brothers
Vice President - Site Operations
PSEG Nuclear - X15
P.O. Box 236
Hancocks Bridge, NJ 08038

Mr. John T. Carlin
Vice President - Nuclear Assessments
PSEG Nuclear - N10
P.O. Box 236
Hancocks Bridge, NJ 08038

Mr. Patrick S. Walsh
Vice President - Eng/Tech Support
PSEG Nuclear - N28
P.O. Box 236
Hancocks Bridge, NJ 08038

Ms. Christina L. Perino
Director - Licensing & Nuclear Safety
PSEG Nuclear - N21
P.O. Box 236
Hancocks Bridge, NJ 08038

Jeffrie J. Keenan, Esquire
PSEG Nuclear - N21
P.O. Box 236
Hancocks Bridge, NJ 08038

Ms. R. A. Kankus
Joint Owner Affairs
PECO Energy Company
Nuclear Group Headquarters KSA1-E
200 Exelon Way
Kennett Square, PA 19348

Lower Alloways Creek Township
c/o Mary O. Henderson, Clerk
Municipal Building, P.O. Box 157
Hancocks Bridge, NJ 08038

Dr. Jill Lipoti, Asst. Director
Radiation Protection Programs
NJ Department of Environmental
Protection and Energy
CN 415
Trenton, NJ 08625-0415

Brian Beam
Board of Public Utilities
2 Gateway Center, Tenth Floor
Newark, NJ 07102

Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Senior Resident Inspector
Salem Nuclear Generating Station
U.S. Nuclear Regulatory Commission
Drawer 0509
Hancocks Bridge, NJ 08038

Mr. Carl J. Fricker
Plant Manager
PSEG Nuclear - N21
P.O. Box 236
Hancocks Bridge, NJ 08038

REQUEST FOR ADDITIONAL INFORMATION

REGARDING PROPOSED AMENDMENT REQUEST

SALEM GENERATING STATION, UNIT NOS. 1 AND 2

DOCKET NOS. 50-272 AND 50-311

(1) On page 5-1 of WCAP-16193-P[1], it is stated that the LOCA mass and energy releases are based on WCAP-10325-P-A[2], which states that the core power is assumed to be 102% of the licensed power level. On page 5-3 of WCAP-16193-P, the allowance for calorimetric error is listed as +0.6% (of licensed power). Provide the justification for the use of this lower value.

(2) On page 5-15 of WCAP-16193-P, it is stated that no Zirc-water reaction heat was considered because the cladding temperature did not rise high enough for this reaction to proceed. The guidance presented in Standard Review Plan (SRP) 6.2.1.3, "Mass and Energy Release Analysis for Postulated Loss-of-Coolant Accidents," for sources of energy includes the metal-water reaction. Clarify the statement in this WCAP as to whether or not the metal-water reaction energy is considered to be part of the mass and energy model and, if present, would be included in the containment response analysis.

(3) On Page 26/40 of Appendix A in WCAP-16193-P, the component cooling water (CCW) heat exchanger fouling factor is listed as 0.0016. The fouling factor is used to determine the CCW heat transfer rate. However, on page 6-7 of this WCAP (Table 6.1-3) the fouling factor is stated to be 0.0015. (The 0.0015 value is also quoted elsewhere, for example in the background material and in some of the Appendices in this WCAP). This suggests the containment response analysis is based on less fouling than anticipated. (a) Clarify this apparent discrepancy, revise the documentation accordingly and, if necessary, revise the analyses. (b) How was the anticipated fouling factor determined?

(4) On page 6-9 of WCAP-16193-P, the containment spray performance during the injection phase is presented as a function of flow (gpm) versus containment pressure. In the COCO[3] description, the spray (Section 2.5.2, Internal Spray System) is represented as the function of mass flow (lbm/sec) versus time, to be consistent with the spray treatment model in COCO. (a) How is the flow versus pressure data converted for use in COCO? (b) The spray flow for the recirculation flow is also presented as a single value (in gpm). How is this value converted for use in COCO?

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[1] "Salem Unit 1 and Unit 2 Containment Response to LOCA [loss-of-coolant accident] and MSLB [main steamline break] for Containment Fan Cooler Unit/Service Water System Enhancement Project," WCAP-16193-P, March 2004.

[2] "Westinghouse LOCA Mass and Energy Release Model for Containment Design March 1979 Version," WCAP-10325-P-A, May 1983.

[3] "Containment Pressure Analysis Code (COCO)," WCAP-8327, July 1974.

Enclosure

(5) The proposed containment pressure response analysis includes credit for the recirculation spray to demonstrate compliance with General Design Criterion 38 and for equipment qualification. The residual heat removal and component cooling water heat exchanger heat removal rates are also part of the analysis model. (a) How are the analysis values (as presented in Table 6.1-4 of WCAP-16193-P, for example flow rates and heat transfer rates) verified and maintained over the operating life of the plant? (b) Are there technical specification (TS) requirements associated with these value? In Attachment 2, proposed TS markups of the submittal only the fan cooler flow performance is addressed.

(6) COCO (1974) predates the staff position (1979) for the allowance of 8% revaporization during a steamline break. Do the temperature calculations for equipment qualification include a model for revaporization during a steamline break as described in the 1979 NUREG-0588, “Interim Staff Position on Environment Qualification of Safety-Related Electrical Equipment?”

(7) The service water (SW) accumulator is sized to provide time for manual actuation of the safety-related SW if the non-safety-related chilled water system pressure boundary fails. Attachment 4 of the submittal provides limited information. Provide a description of the safely analysis performed to establish the TS limits proposed for the SW accumulator (surveillance requirement (4.6.2.3). Include the size range covered for the break/leak in the chilled water system and the time allowed for the operator manual action.